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मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8271-4-2 (1983): Specification FOR Quartz Crystal Units Used for Frequency Control and Selection, Part 4: Series ab for Oscillators, Section 2: Quartz Crystal Unit Type AB-02 [LITD 5: Semiconductor and Other Electronic Components and Devices]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard



SPECIFICATION FOR
QUARTZ CRYSTAL UNITS USED FOR FREQUENCY
CONTROL AND SELECTION

PART 4 SERIES AB FOR OSCILLATORS

Section 2 Quartz Crystal Unit Type AB-02

- 0. General** — This standard shall be read in conjunction with IS : 8271 (Part 1) - 1981 ' Specification for quartz crystal units used for frequency control and selection: Part 1 General requirements and tests (first revision) '.
- 1. Outline and Dimensions** — Holder outline shall conform to Type AB (see Sheet 1A of IS : 4570 - 1968 ' Specification for crystal holders ').
- 2. Marking** — See 8 of IS : 8271 (Part 1) - 1981.
- 3. Construction and Workmanship** — See 7 of IS : 8271 (Part 1) - 1981.
- 4. Test Schedule and Detail Requirements**
- 4.1 General Conditions for Test** — See 9.2 of IS : 8271 (Part 1) - 1981.
- 4.2 Test Schedule** — The sequence and grouping of type, routine and acceptance tests shall be in accordance with 9.1 of IS : 8271 (Part 1) - 1981.
- 4.3 Detail Requirements** — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

Piezoelectric Devices for Frequency Control and Selection Sectional Committee, LTDC 12 [Ref: Doc : LTDC 12 (659)]

TABLE 1 DETAIL REQUIREMENTS OF QUARTZ CRYSTAL UNIT TYPE AB-02
(Clause 4.3)

SI No.	Characteristic	Requirement
(1)	(2)	(3)
i)	Type of holder	AB (see 1)
ii)	Frequency range	16 to 100 kHz
iii)	Frequency tolerance: Operating temperature range	± 120 ppm
iv)	Resonance resistance	See Table 2
v)	Mode of oscillation	Fundamental
vi)	Load capacitance	Infinity
vii)	Capacitance shunt	See Table 3
viii)	Operating temperature range	-40°C to +70°C
ix)	Test set, calibration values and rated drive level	See Table 4
x)	Shock [in accordance with 9.15 (Severity A) of IS : 8271 (Part 1) - 1981]:	
	a) Frequency change permitted	± 10 ppm
	b) Resonance resistance change permitted	± 15 percent
xi)	Vibration [in accordance with 9.16.1 (Severity A) of IS : 8271 (Part 1) - 1981]:	
	a) Frequency change permitted	± 10 ppm
	b) Resonance resistance change permitted	± 15 percent
xii)	Temperature cycling:	
	a) Frequency change permitted	± 10 ppm
	b) Resonance resistance change permitted	± 15 percent
xiii)	Temperature run:	
	a) Frequency change permitted	± 10 ppm
	b) Resonance resistance change permitted	± 15 percent
xiv)	Bond strength	From 16 to 60 kHz 8 N (Min), and over 60 to 100 kHz 7 N (Min)

TABLE 2 RESONANCE RESISTANCE
[Table 1 (iv)]

Frequency Range	Maximum Resonance Resistance
(1)	(2)
kHz	Ohms
From 16 to 30	100 000
Over 30 to 50	90 000
„ 50 „ 70	80 000
„ 70 „ 90	70 000
„ 80 „ 100	60 000

TABLE 3 CAPACITANCE SHUNT

[Table 1 (vii)]

Frequency Range	Capacitance Shunt*
(1)	(2)
kHz	pF
From 16 to 34	$\frac{24}{\sqrt{f}} + 1.6$
Over 34 to 54	$\frac{33}{\sqrt{f}} + 1.6$
„ 54 „ 100	$\frac{24}{\sqrt{f}} + 1.6$

*Capacitance determined by formulae given is subject to a tolerance of ± 15 percent. The letter 'f' represents specified frequency in kHz.

TABLE 4 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[Table 1 (ix)]

Sl No.	Frequency Range	Calibration Value		Rated Drive Level	Test Set
		Resistance	Resistor Voltage Drop		
(1)	(2)	(3)	(4)	(5)	(6)
	kHz	Ohms	Volts	mW	
i)	From 16 to 30	70 000	2.65	0.1	} TS-710/TSM
ii)	Over 30 „ 50	63 000	2.51	0.1	
iii)	„ 50 „ 70	56 000	2.37	0.1	
iv)	„ 70 „ 90	49 000	2.21	0.1	
v)	„ 90 „ 100	42 000	2.05	0.1	

EXPLANATORY NOTE

This standard (Part 4/Sec 2) covers the requirements of crystal unit, style QC-02 of JSS 50901 (1971) 'Detail specification for crystal unit, quartz, styles QC-01 and QC-02', issued by the Directorate of Standardization, Ministry of Defence, Government of India.